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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/857,572 | | John P. O'Brien | CL-1330 | 4982 |

7590 04/30/2004
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EXAMINER

WHITE, EVERETT NMN

ART UNIT PAPER NUMBER

1623

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 09/857,572 | Applicant(s) O'BRIEN, JOHN P. | |
| | Examiner EVERETT WHITE | Art Unit 1623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-11 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. The amendment filed November 24, 2003 has been received, entered and carefully considered. The amendment affects the instant application accordingly:
 - (A) Claims 4, 12 and 18 have been canceled.
 - (B) Claims 1, 5 and 14 have been amended.
 - (C) Comments regarding Office Action have been provided drawn to:
 - (a) 102(b) rejection, rendered moot by new ground of rejection over newly cited U.S. Patent;
 - (b) 103(a) rejection, which has been maintained for the reasons of record.
2. Claims 1-3, 5-11 and 13-17 are pending in the case.
3. The text of those sections of Title 35, U. S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US Patent No. 4,830,752, already of record) in view of Maeda et al (US Patent No. 4,109,663, newly added).

Applicants claim a polysaccharide fiber, comprising: a polymer comprising hexose units wherein at least 50% of the hexose units are linked via an $\alpha(1\rightarrow3)$ glycoside linkage, said polymer having a number average degree of polymerization of at least 100, and wherein said fiber has a tensile strength of at least 1 gram per denier. Claims 2 and 3, which depend from Claim 1, further limit the invention by designating the amount of hexose and the identity of the polymer.

The Shibata et al patent discloses α -1,3-glucans (see structure at bottom of column 1) and discloses the degree of polymerization of the polysaccharides ranging from 5 to 500 (see column 2, lines 45-47). See column 3, lines 29 and 30, wherein Shibata et al discloses the glucan agents being spun into fiber. The instantly claimed polysaccharide fiber differs from the polysaccharide fiber of the Shibata et al patent by claiming the fiber as having a tensile strength of at least 1 gram per denier. However, the Maeda et al patent shows 1,3-glucan fibers having such tensile strength is known in

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the art. The Maeda et al patent sets forth a thermo-gelable β -1,3-glucan-type polysaccharide that may be used as the sole smoking material providing improved smoking characteristics such as flavor, taste, and irritability, and improved physical properties such as thickness, wet-proof qualities, tensile strength, elongation and filing capacity. See column 6, 3rd paragraph wherein the polysaccharide is made into sheets and see Experiment 6 in column 9 of the Maeda et al patent wherein the tobacco sheets are shown to have a tensile strength of 181 g/mm (control product) to 220 g/mm. The tensile strength results set forth in the Maeda et al patent covers the tensile strength range set forth in the instant claims. It is noted that the polysaccharides disclosed in the Shibata et al and the Maeda et al patents are polysaccharides obtained from identical microorganisms. This identical origin for the polysaccharides supports the argument that the polysaccharides used in the Shibata et al patent are polysaccharides that produce fibers having tensile strength analogous to the tensile strength of the fibers set forth in the Meada et al patent and the instant claims. See column 2, lines 17, 20 and 21 wherein the Shibata et al patent sets forth glucans obtained from the genus *Pachyman* and from *Alcaligenes faecalis* var. *myxogenes*, which are also set forth in the Meada et al patent at column 2, lines 50, 53, 58, 64 and 65. This feature further supports the motivation for combining the Shibata et al patent with the Meada et al in a rejection of the claims under 35 U.S.C 103. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polysaccharide fiber of the Shibata et al patent with a polysaccharide fiber having tensile strength of at least 1 gram per denier in view of the recognition in the art, as evidenced by the Maeda et al patent, that use of polysaccharide fiber having such tensile strength possesses improved physical properties.

5. Applicant's arguments with respect to Claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

6. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US Patent No. 4,830,752).

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Applicants claim a liquid crystalline solution, comprising: a solvent and an amount sufficient to form liquid crystals of a polymer comprising hexose units wherein at least 50% of the hexose units are linked via an $\alpha(1\rightarrow3)$ glycoside linkage, and wherein the amount of polymer provides a solids content of at least 10%. Additional limitations in the dependent claims include the polymer being poly- $\alpha(1\rightarrow3)$ -D-glucose acetate; the solvent selected from a group that includes an organic acid and organic halide.

The Shibata et al patent discloses 1.3 g of α -1,3-glucan triacetate dissolved in a mixture of 9 ml of dichloromethane, 3 ml of acetic acid, and 4 ml of acetic anhydride to which was added 0.05 ml of 7% perchloric acid (see SYNTHESIS EXAMPLE 3 in column 8). The acetic acid and dichloromethane recited in the Synthesis Example 3 of the Shibata et al patent encompasses the organic acid and organic halide set forth in instant Claim 17. The instant claims differ from the Shibata et al patent by claiming the liquid crystalline solution as having a solids content of 10%. However, it is within the skill of an artisan in this art to change the concentration of a component in a composition. While Applicants claims are directed to a product limited by the process employed in its production, there is no reason found for concluding that the product claimed could be distinguished from the product of the Shibata et al patent merely because the claimed product was produced under the specific conditions recited, which conditions fall within the purview of the disclosure of the Shibata et al patent. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) invention to replace the liquid crystalline solution having a particular solids content with a liquid crystalline solution having a solids content of at least 10% in view of their closely related structures and the resulting expectation of similar fiber producing properties.

7. Applicant's arguments with respect to Claims 14-18 have been considered but are moot in view of the new ground(s) of rejection.

8. Claims 5-11 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US Patent No. 4,830,752) for the reasons set forth on pages 4 and 5 of the Office Action mailed August 22, 2003.

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9. Applicant's arguments filed November 24, 2003 have been fully considered but they are not persuasive. Applicants argue against the rejection on the ground that an examination of the $\alpha(1,3)$ linkage of the polymer of the present invention does not create the expectation that it will form a liquid crystalline solution, because it exhibits chain extending bonds that are not parallel to the backbone, but surprisingly, does form a liquid crystalline structure. This argument is not persuasive since products of identical chemical composition cannot have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada* 15 USPQ 2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01. Accordingly, the rejection of Claims 5-11 and 13 under 35 U.S.C. 103(a) as being unpatentable over the Shibata et al patent is maintained for the reasons of record.

Summary

10. All the claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

11. For 24 hour access to patent application information 7 days per week, or for filing applications, please visit our website at www.uspto.gov and click on the button "Patent Electronic Business Center" for more information.

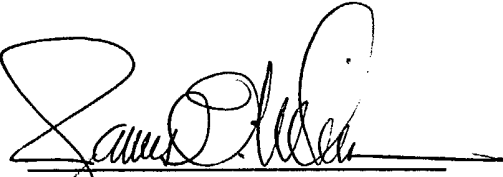
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is (571) 272-0660. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson, can be reached on (571) 272-0661. The fax phone number for this Group is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.


E. White


James O. Wilson
Supervisory Primary Examiner
Technology Center 1600